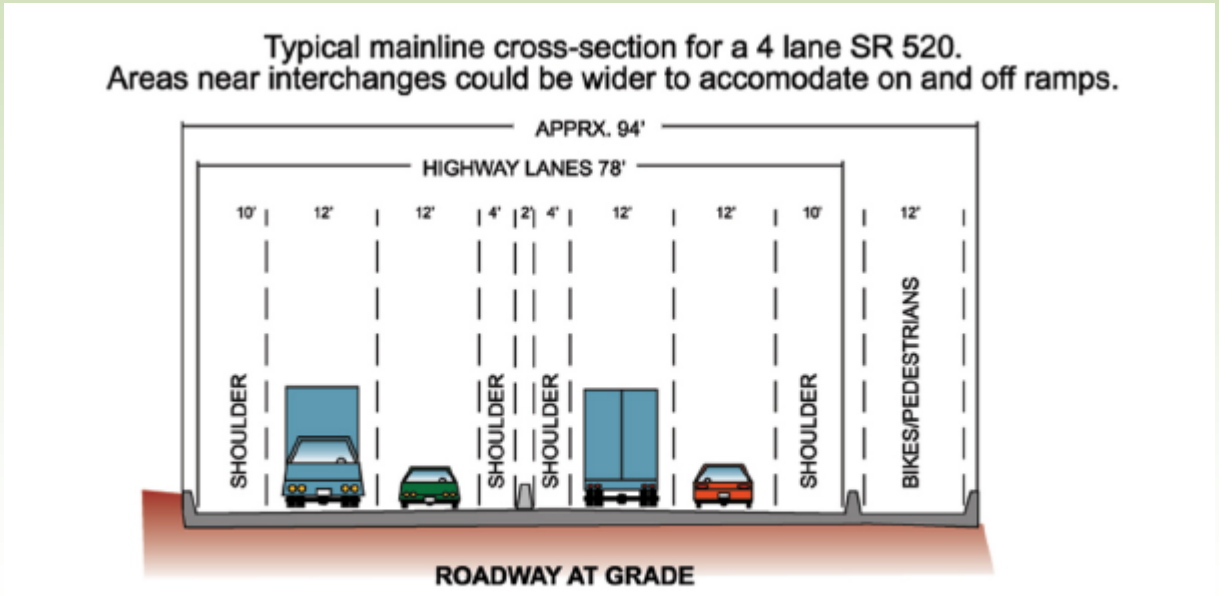
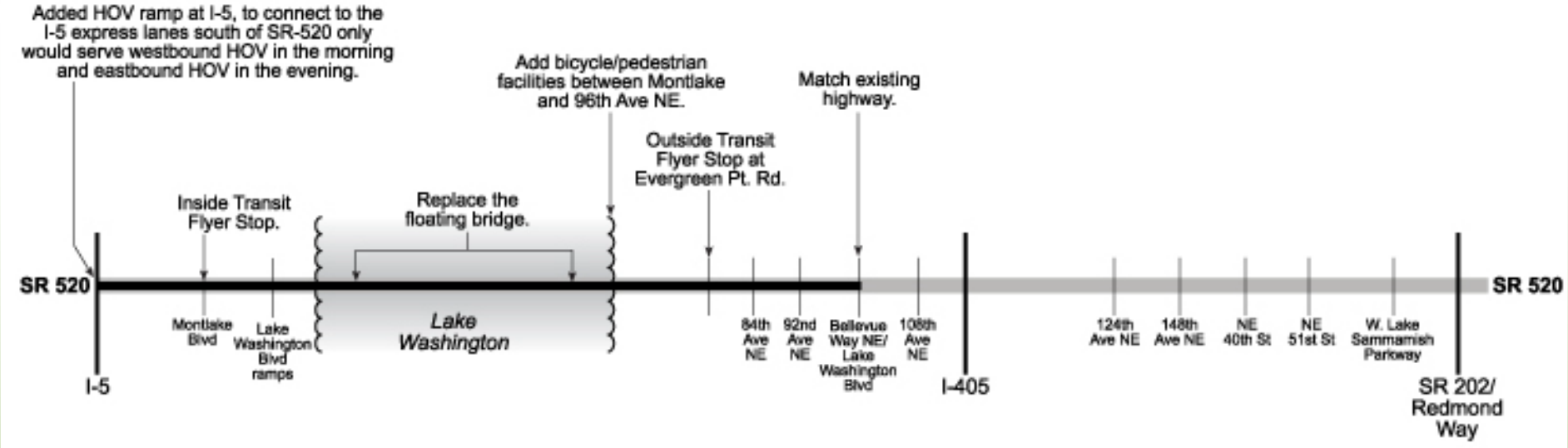
# Selecting a Preliminary Preferred Alternative

**Supporting Information:**

- ✓ **Graphic depiction of three build alternatives (4, 6 & 8 lanes) for SR 520 corridor**
- ✓ **Summary of approximate transportation performance & effectiveness, with associated needed local arterial changes**
- ✓ **Summary of approximate distinguishing environmental impacts**
- ✓ **Cost estimate ranges for each alternative**
- ✓ **Definition of high-capacity transit accommodation in SR 520 corridor.**

## SR 520 Trans-Lake Washington Project

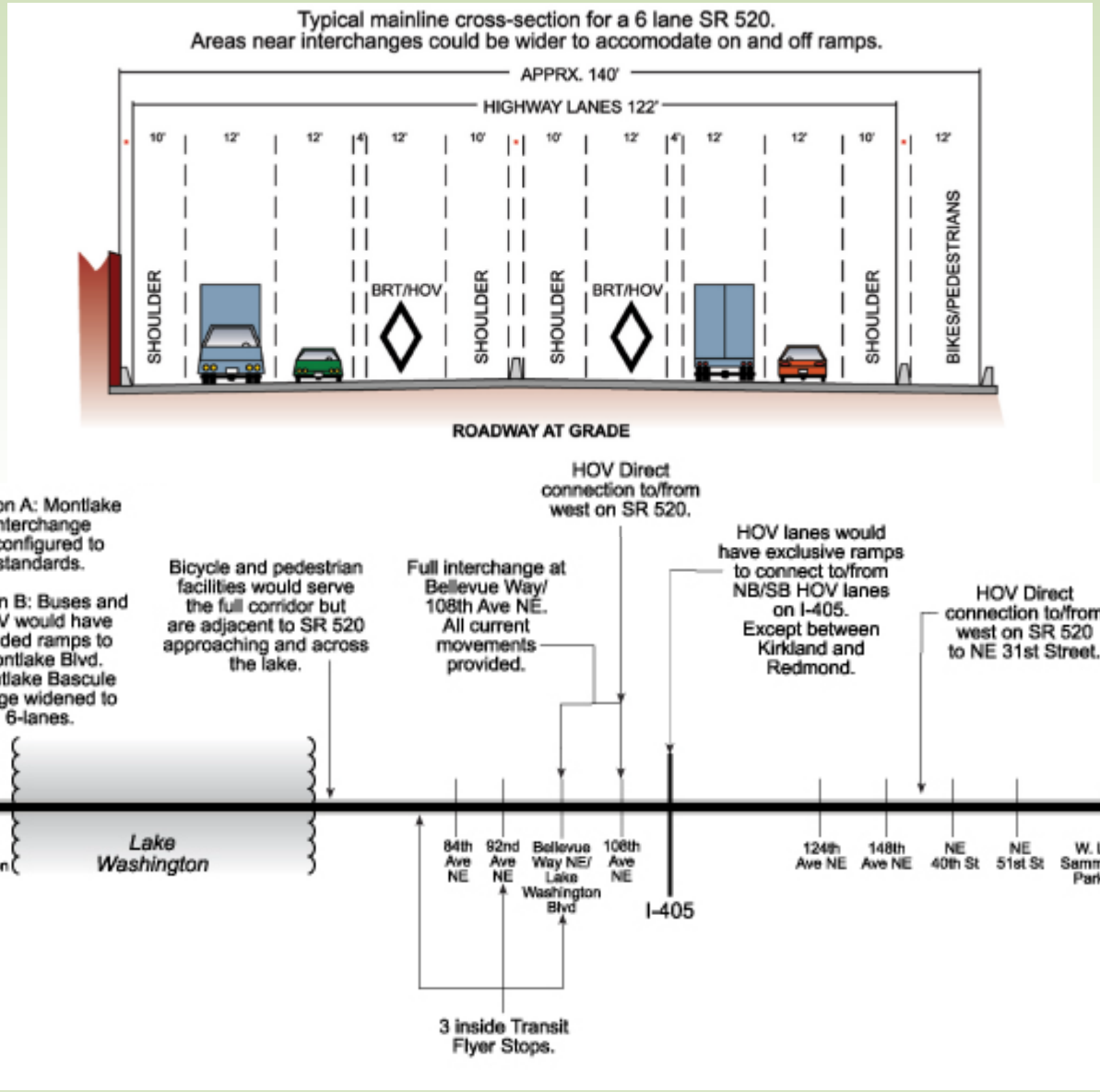



# Alternative 2 (4 Lanes) SR 520 Safety and Preservation

*Draft – June 2002*

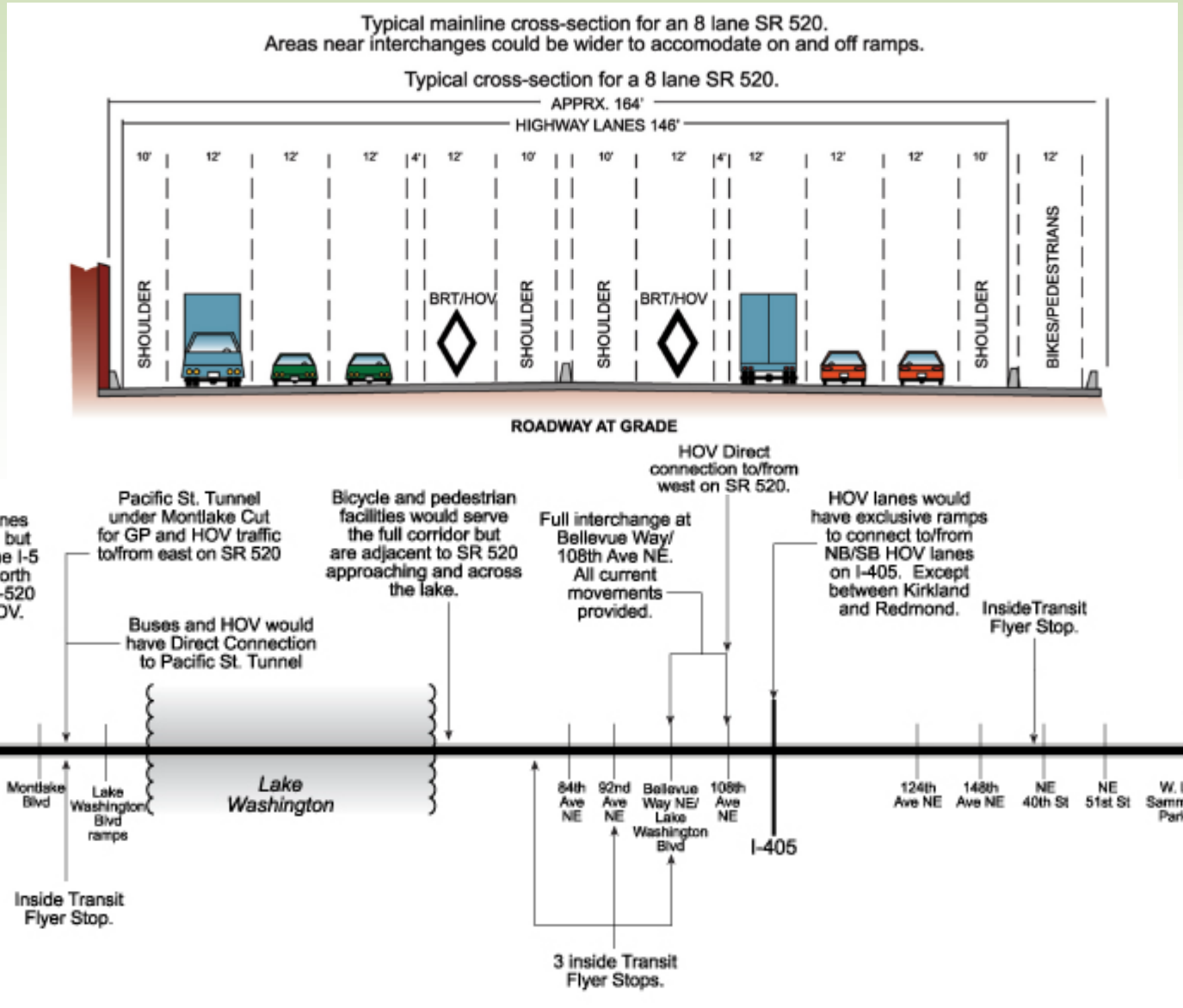
## SR 520 Trans-Lake Washington Project




# Alternative 3 (6 Lanes) SR 520 HOV

*Draft – June 2002*

## SR 520 Trans-Lake Washington Project




# Alternative 4 (8 Lanes) SR 520 HOV and GP

*Draft – June 2002*

## SR 520 Trans-Lake Washington Project

# SR-520 Performance (Year 2020)

| | 4 Lane | 6 Lane | 8 Lane |
|---|---|---|---|
| **Daily Person Demand (vehicles/day)** | | | |
| GP | 145,000 | 147,750 | 203,500 |
| HOV/Transit | 28,250 | 53,000 | 58,000 |
| Total | 173,250 | 200,750 | 261,500 |
| **Daily Vehicle Demand (vehicles/day)** | | | |
| GP | 116,300 | 118,300 | 162,200 |
| HOV/Transit | 4,200 | 11,100 | 11,900 |
| Total | 120,500 | 129,400 | 174,100 |
| **Reliability** | GP/Freight - Heavy corridor congestion reduces reliability. Additional shoulder width in S&P provides a small benefit for reliabilty. | GP/Freight - Improved reliability over No-Action, but still experiences a high level of congestion. | GP/Freight - Additional GP cacpacity improves corridor congestion and reliability. |
| | Transit - Same as freight. | Transit - Completion of HOV lanes provides a high level of transit and HOV reliability. | Transit - Completion of HOV lanes provides a high level of transit and HOV reliability. |
| **Freeway Travel Time During Peak Hour (min)[1]** | | | |

| Peak | AM | | PM | | AM | | PM | | AM | | PM | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direction | WB | EB | WB | EB | WB | EB | WB | EB | WB | EB | WB | EB |
| Travel Time[2] | 69 (35) | 52 (23) | 69 (35) | 53 (21) | 36 (8) | 31 (8) | 36 (8) | 30 (8) | 10 (8) | 11 (8) | 10 (8) | 11 (8) |

1 - Travel time between 124th Ave NE and I-5
2 - # GP, (#) HOV

Performance characteristics assume local arterial improvements are in place

*June 2002*

## SR 520 Trans-Lake Washington Project

# Local Arterial Changes Needed to Support Projected Volumes

| | | |
|---|---|---|
| **Six - Lane (2 GP & 1 HOV Lanes)** | | |
| **East-Side** | **Lake Washington Boulevard NE/Northup Way:** Two westbound left-turn lanes. Widen Lake Washington Boulevard NE | |
| **West-side** | **Mercer/Fairview:** Add third westbound right-turn lane. (Intersection operations remain at LOS F). | **Montlake/SR 520 WB Ramps:** Create a 4-leg signalized intersection two WB approach lanes and a NB left-turn lane to the WB on-ramp. |
| | **Montlake/SR 520 EB Ramps/Lake WA Blvd:** Add a second NB left-turn lane. | **Montlake Blvd. (option B):** Add second structure parallel to existing bridge. |
| **Eight-Lane (3GP & 1 HOV Lanes)** | | |
| **East-side** | **NE 40th Street/156th Avenue NE:** Add eastbound right-turn pocket with two dedicated eastbound through lanes. | **West Lake Sammamish Parkway NE/Leary Way:** Add one approach lane to EB SR-520 off-ramp. Add one lane to WB SR-520 on-ramp. |
| | **Lake Washington Boulevard NE/Northup Way:** Three westbound left-turn lanes. Widen Lake Washington Boulevard NE. | **148th Avenue NE/Eastbound SR-520 Ramp:** Add EB to SB off-ramp lane. Add right turn pocket to EB to NB off-ramp. Add right turn pocket on 148th for NB to EB ramp. Add a GP lane to EB on-ramp (merge to one on-ramp lane). |
| | **92nd Avenue NE/Westbound SR-520 Ramp:** Add westbound right-turn | **Redmond Way/NE 76th Street (Westbound on-ramp):** Add right-turn pocket to NE 76th Street at Redmond Way/westbound ramp intersection. Add a thru lane to SR 520 SB at SR 520/Union Hill |
| **West-side** | **Mercer/Fairview:** Add third westbound right-turn lane. | **Montlake/Pacific Place:** Add a NB through lane. Remove one EB left-turn lane. Restrict WB approach to right-turn only and remove one lane. |
| | **Roanoke/Harvard/SR 520 WB Off-ramp:** Redesign for free-flowing right-turn movement. | **Montlake/SR 520 EB Ramps/Lake WA Blvd:** Add a second NB left-turn lane. Remove SB right-turn lane (no longer needed). Add a third approach lane for the EB off-ramp. Restripe WB approach to allow left/through/right movements from inside lane. |
| | **Pacific/Pacific:** Remove a through lane in the EB and WB directions. | **Montlake/SR 520 WB Ramps:** Redesign ramp terminal to create a 4-leg intersection and signalize the intersection. Redesigned intersection would provide two approach lanes for the WB off-ramp and a NB left-turn lane for accessing the WB on-ramp. |
| | **Montlake/Pacific Street:** Create a split-level intersection. At surface level intersection, add two approach lanes to EB and WB approaches, make signal modifications, allow all movements at the intersection. At below-grade intersection, signalize and provide two SB left-turn lanes, one EB through lane, and a free-flowing right-turn lane. | **SR 520 Ramps/Lake WA Blvd:** Signalize intersection. |

*June 2002*

**SR 520 Trans-Lake Washington Project**

# 4-lane, 6-lane, and 8-lane Alternatives Distinguishing Environmental Impacts*

| Environmental Element | 4-lane | 6-lane | 8-lane |
|---|---|---|---|
| Wetlands | 7 acres | 22 acres | 24 acres |
| Parks and Trails | 9 parklands;<br>4 acres of direct impact | 14 parklands;<br>7 acres of direct impact | 14 parklands;<br>7 acres of direct impact |
| Displacements (structures)<br>- Residential | 2 | 14; 16 with parallel Montlake Bridge | 17 |
| - Non-residential | 4 | 28 | 39 |
| Land Required for New Right of Way | 6 acres | 59 acres | 67 acres |

* Impacts are approximate and will be refined during the EIS analysis.

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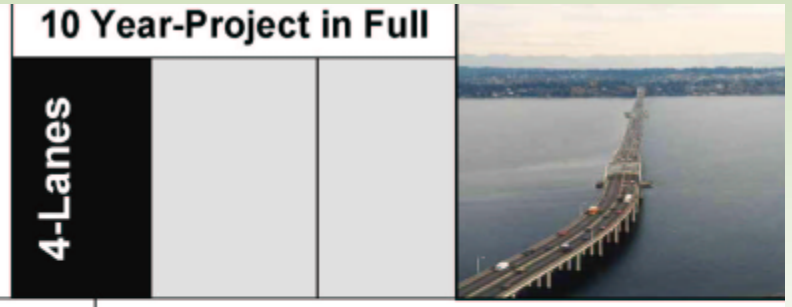
**SR 520 Trans-Lake Washington Project**

# SR 520 Trans-Lake Washington Project (Seattle to Redmond, 4-Lanes)




## Description:

- Rebuilds existing four lane freeway between Seattle and Redmond
- Includes replacement of SR 520 floating bridge, approaches, and Portage Bay bridge
- Adds expanded roadway shoulders and bicycle and pedestrian lanes
- Accommodate future expansion for high-capacity transit via widened bridge pontoons

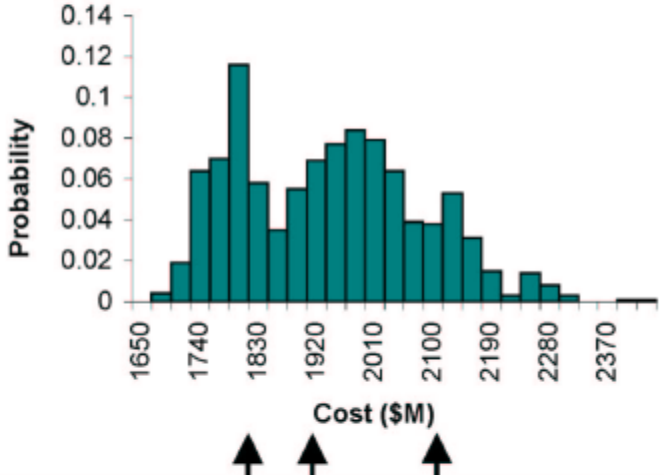
## Schedule:

Begin Construction Range: 2005 - 2007

End Construction Range: 2014 - 2016

Inflation escalation is to 2011, approximate midpoint of construction

## CEVP Result:




## Project Cost Range

**There is a 10% chance the cost is less than $ 1.8 Billion**

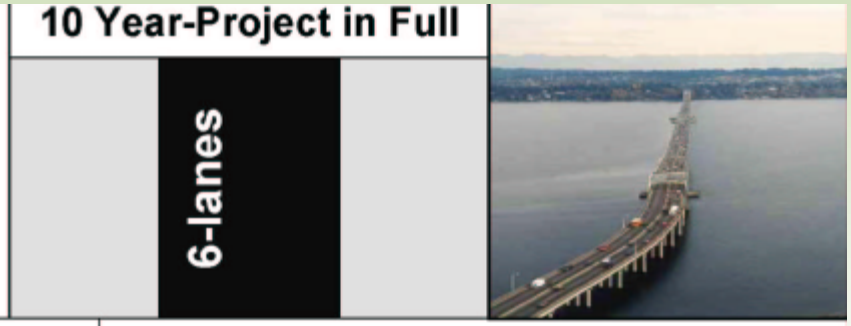
**There is a 50% chance the cost is less than $ 1.9 Billion**

**There is a 90% chance the cost is less than $ 2.1 Billion**

*June 2002*

**SR 520 Trans-Lake Washington Project**

# SR 520 Trans-Lake Washington Project (Seattle to Redmond, 6-Lanes)




## Description:

- Reconstructs and expands SR 520 to six lanes between Seattle and Redmond (adds one HOV/bus rapid transit lane each direction)
- Replaces SR 520 floating bridge, approaches, and Portage Bay bridge
- Adds expanded roadway shoulders, bicycle and pedestrian lanes
- Includes five 300-500-foot lidded sections of freeway
- Accommodate future expansion for high-capacity transit via widened bridge pontoons

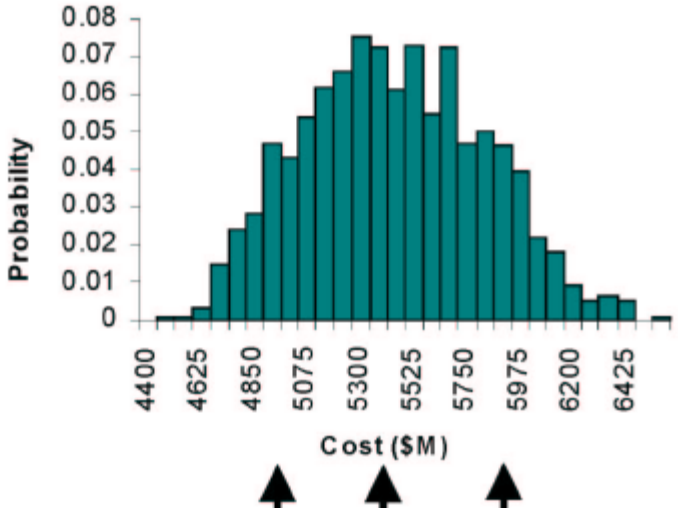
## Schedule:

Begin Construction Range: 2005 - 2007

End Construction Range: 2014 - 2016

Inflation escalation is to 2011, approximate midpoint of construction

## CEVP Result:




## Project Cost Range

**There is a 10% chance the cost is less than $ 4.9 Billion**

**There is a 50% chance the cost is less than $ 5.4 Billion**

**There is a 90% chance the cost is less than $ 5.9 Billion**

*June 2002*

**SR 520 Trans-Lake Washington Project**

# SR 520 Trans-Lake Washington Project (Seattle to Redmond, 8-Lanes)


## Description:

- Reconnects and expands SR 520 to eight lanes between Seattle and Redmond (adds one general purpose and one HOV/bus rapid transit lane in each direction)
- Replaces SR 520 floating bridge, approaches, and Portage Bay bridge
- Adds expanded roadway shoulders and bicycle and pedestrian lanes
- Includes five 300-500-foot lidded sections of freeway
- Accommodate future expansion for high-capacity transit via widened bridge pontoons

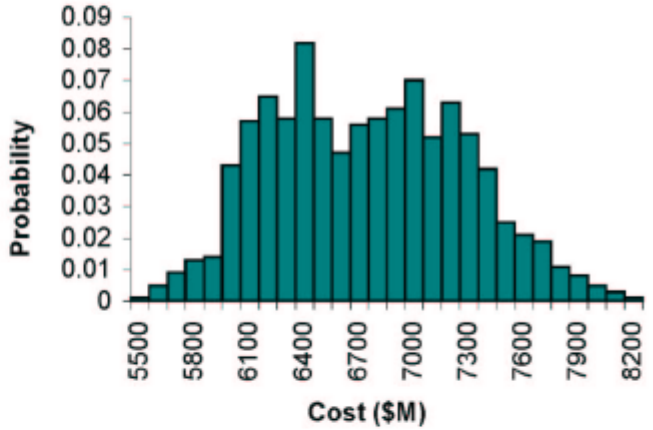
## Schedule:

Begin Construction Range: 2005 - 2008

End Construction Range: 2016 - 2018

Inflation escalation is to 2011, approximate midpoint of construction

## CEVP Result:




**Project Cost Range**

There is a 10% chance the cost is less than $ 6.0 Billion

There is a 50% chance the cost is less than $ 6.7 Billion

There is a 90% chance the cost is less than $ 7.4 Billion

*June 2002*

# The Question

- The Executive Committee requested that the EIS Alternatives examine accommodating HCT in SR-520 corridor in the future.

# The Response

- Four Scenarios
  - No accommodation
  - Accommodate on floating bridge only
  - Accommodate on lake crossing and key structures
  - Preserve on full corridor
- Two segments to consider
  - Montlake to 124th Avenue NE (Table 1)
  - 124th Avenue NE to Redmond (Table 2)
- Pros and cons for each scenario
  - Discussion needed on appropriate definition

*June 2002*

**SR 520 Trans-Lake Washington Project**

# Table 1: HCT Accommodation/Preservation in SR 520 Corridor: Montlake to 124th Avenue NE

| Scenario | Pros | Cons |
|---|---|---|
| 1. No Accommodation | • No added costs or ROW<br>• No design impacts<br>• No alignment commitment | • HCT implementation difficult<br>• Highest total project long term cost<br>• Potential high future environmental impacts |
| 2. Accommodation on Floating Bridge | • Adds cost only to floating bridge and foundations of approach spans<br>• No/minimal additional ROW required, no additional displacements<br>• High flexibility for HCT alignment on either side of lake<br>• Smallest investment risk if HCT never implemented | • HCT implementation costly and disruptive beyond floating bridge<br>• Higher total cost and environmental impacts<br>• EIS analysis of future HCT line may be required now if it increases ROW and/or environmental impacts for Trans-Lake Project compared to "No Accommodation"* |
| 3. Accommodation on Entire SR 520 Lake Crossing and Key Structures (eg, Lids, Underpasses, Interchanges) | • Integrated design reduces overall costs and impacts of both projects combined<br>• HCT implementation less complex and disruptive, since key structures are in place | • Moderate to high cost impacts to the Trans-Lake Project with very uncertain HCT timing and funding<br>• Some added ROW and potential impacts to the Trans-Lake Project for that may prove in future to be unnecessary<br>• Less flexible for HCT alignment changes<br>• EIS of future HCT line will probably be required now if it increases ROW and/or environmental impacts for Trans-Lake Project compared to "No Accommodation"* |
| 4. Preservation on Full Corridor | • Lowest cost for implementing future HCT<br>• Potential for lowest overall cost and environmental impacts of both projects combined<br>• Allows optimal HCT alignment to be fully integrated with highway design and construction | • Highest design and cost impact for Trans-Lake Project with uncertain HCT project timing and funding<br>• Requires further design development now of both highway and HCT alignments, to optimize combined projects<br>• Least flexible for HCT alignment changes<br>• Highest risk of unnecessary property acquisition or construction<br>• EIS analysis of future HCT line will very likely be required now since it will increase ROW and environmental impacts for Trans-Lake Project compared to "No Accommodation"* |

*If this alternative is considered further, the Federal Highway Administration (FHWA), Federal Transit Administration (FTA) and Legal Counsel should be consulted about the legal issues related to ROW acquisition, environmental impacts and costs for an HCT project which is far in the future and whose design has not been fully developed or analyzed.

*June 2002*

# Table 2: HCT Accommodation/Preservation in SR 520 Corridor: 124th Avenue NE to Redmond

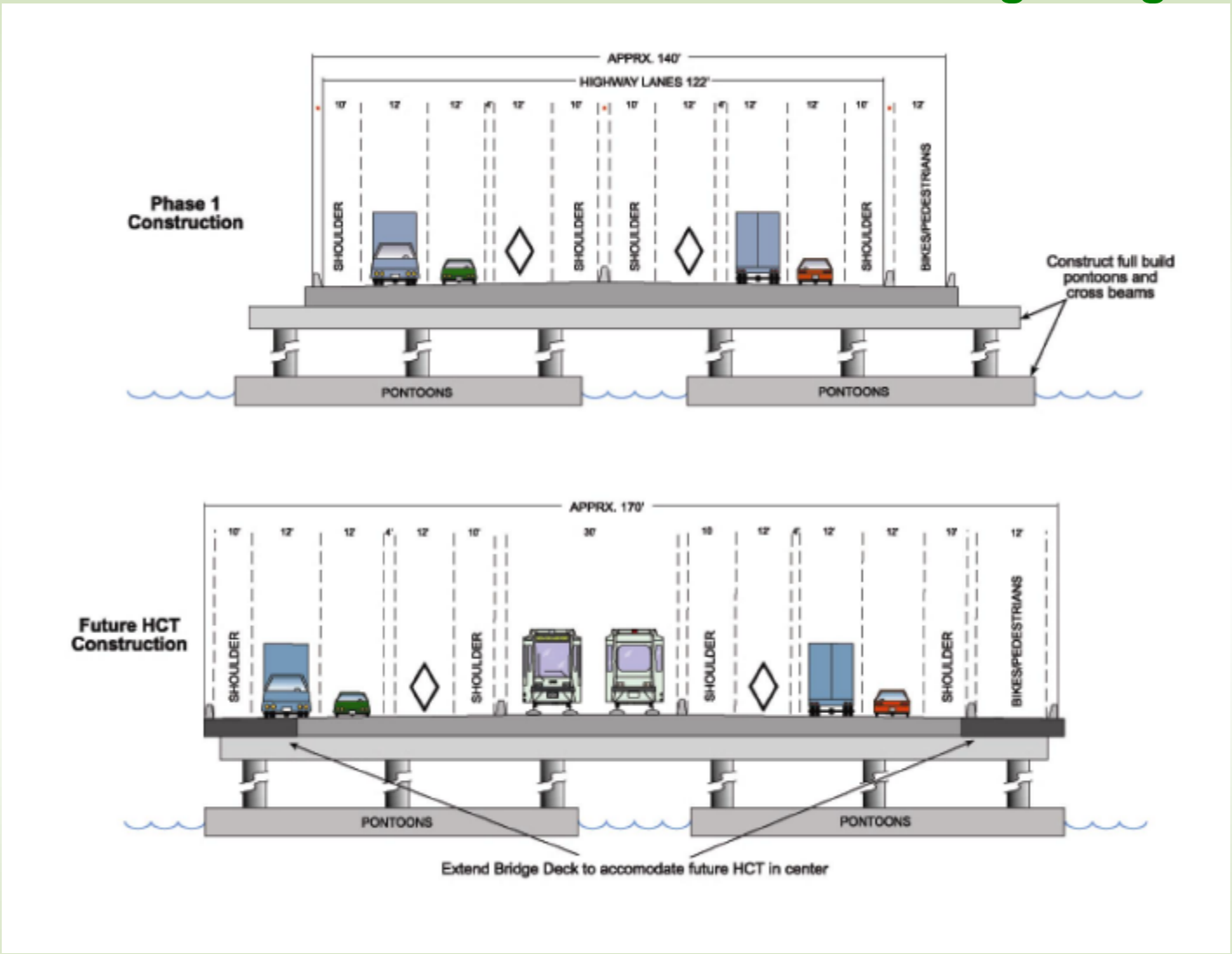
| Scenario | Pros | Cons |
|---|---|---|
| 1. No Accommodation | • No added costs or ROW<br>• No design impacts<br>• No alignment commitment | • Increases complexity of HCT design<br>• Some HCT design compromises may be required to reduce impacts<br>• Higher costs for future HCT line due to uncoordinated design |
| 2. Accommodation at Key Structures | • HCT implementation less complex and disruptive, since under-crossing north of Overlake will be in place<br>• No additional ROW or displacements likely required as part of Trans Lake Project | • Requires early investment in under-crossing of SR 520 north of Overlake as part of Trans-Lake Project<br>• Potential risk of unnecessary under-crossing construction if HCT alignment changes<br>• Requires further design development now of HCT alignment at under-crossing |
| 3. Preservation on Full Corridor | • Integrated design over length of corridor reduces overall costs and impacts of both projects combined<br>• Ease of HCT line implementation optimized | • Very high cost impact for Trans-Lake Project primarily due to additional ROW acquisition, that may prove to be unnecessary<br>• Least flexibility for future HCT alignment changes<br>• Requires significant design development now throughout corridor to refine HCT envelope requirements<br>• EIS analysis of future HCT line will very likely be required now since it will increase ROW and environmental impacts for Trans-Lake Project compared to “No Accommodation”* |

*If this alternative is considered further, the Federal Highway Administration (FHWA), Federal Transit Administration (FTA) and Legal Counsel should be consulted about the legal issues related to ROW acquisition, environmental impacts and costs for an HCT project which is far in the future and whose design has not been fully developed or analyzed.

*June 2002*

SR 520 Trans-Lake Washington Project

# Potential HCT Accommodation on Floating Bridge




6-Lane Example (4-Lane & 8-Lane Accommodation Scenarios Would Vary in Width)

*Draft – June 2002*